



SEQUENCE LISTING

<110> Kufer, et al.

<120> NOVEL METHOD FOR THE PRODUCTION OF ANTIHUMAN ANTIGEN
RECEPTORS AND USES THEREOF

<130> DEBE:017US

<140> 09/403,107

<141> 2002-07-26

<160> 169

<170> PatentIn Ver. 2.1

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 <223> Description of Artificial Sequence: Synthetic Peptide

 <400> 106
 Leu Tyr Glu Asn Asn Val Ile Thr Ile Asp Leu Val Gln
 1 5 10

 <210> 107
 <211> 13
 <212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 107

Glu Asn Asn Val Ile Thr Ile Asp Leu Val Gln Asn Ser
1 5 10

<210> 108

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 108

Asn Val Ile Thr Ile Asp Leu Val Gln Asn Ser Ser Gln
1 5 10

<210> 109

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 109

Ile Thr Ile Asp Leu Val Gln Asn Ser Ser Gln Lys Thr
1 5 10

<210> 110

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 110

Ile Asp Leu Val Gln Asn Ser Ser Gln Lys Thr Gln Asn
1 5 10

<210> 111

<211> 13

<212> PRT

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 111
Leu Val Gln Asn Ser Ser Gln Lys Thr Gln Asn Asp Val
1 5 10

<210> 112
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 112
Gln Asn Ser Ser Gln Lys Thr Gln Asn Asp Val Asp Ile
1 5 10

<210> 113
<211> 13
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 113
Ser Ser Gln Lys Thr Gln Asn Asp Val Asp Ile Ala Asp
1 5 10

<210> 114
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 114
Gln Lys Thr Gln Asn Asp Val Asp Ile Ala Asp Val Ala
1 5 10

<210> 115
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 115
Thr Gln Asn Asp Val Asp Ile Ala Asp Val Ala Tyr Tyr
1 5 10

<210> 116
<211> 13
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 116
Asn Asp Val Asp Ile Ala Asp Val Ala Tyr Tyr Phe Glu
1 5 10

<210> 117
<211> 13
<212> PRT
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<400> 117
Val Asp Ile Ala Asp Val Ala Tyr Tyr Phe Glu Lys Asp
1 5 10

<210> 118
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<212> PRT
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 118
Ile Ala Asp Val Ala Tyr Tyr Phe Glu Lys Asp Val Lys
1 5 10

<210> 119
<211> 13
<212> PRT
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<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 119

Asp Val Ala Tyr Tyr Phe Glu Lys Asp Val Lys Gly Glu
1 5 10

<210> 120

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 120

Ala Tyr Tyr Phe Glu Lys Asp Val Lys Gly Glu Ser Leu
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<210> 121

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 121

Tyr Phe Glu Lys Asp Val Lys Gly Glu Ser Leu Phe His
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<210> 122

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 122

Glu Lys Asp Val Lys Gly Glu Ser Leu Phe His Ser Lys
1 5 10

<210> 123

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

Peptide

<400> 123

Asp Val Lys Gly Glu Ser Leu Phe His Ser Lys Lys Met
1 5 10

<210> 124

<211> 13

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 124

Lys Gly Glu Ser Leu Phe His Ser Lys Lys Met Asp Leu
1 5 10

<210> 125

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 125

Glu Ser Leu Phe His Ser Lys Lys Met Asp Leu Thr Val
1 5 10

<210> 126

<211> 13

<212> PRT

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<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 126

Leu Phe His Ser Lys Lys Met Asp Leu Thr Val Asn Gly
1 5 10

<210> 127

<211> 13

<212> PRT

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<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 127
His Ser Lys Lys Met Asp Leu Thr Val Asn Gly Glu Gln
1 5 10

<210> 128
<211> 13
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 128
Lys Lys Met Asp Leu Thr Val Asn Gly Glu Gln Leu Asp
1 5 10

<210> 129
<211> 13
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 129
Met Asp Leu Thr Val Asn Gly Glu Gln Leu Asp Leu Asp
1 5 10

<210> 130
<211> 13
<212> PRT
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Peptide

<400> 130
Leu Thr Val Asn Gly Glu Gln Leu Asp Leu Asp Pro Gly
1 5 10

<210> 131
<211> 13
<212> PRT
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<220>
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Peptide

<400> 131
 Val Asn Gly Glu Gln Leu Asp Leu Asp Pro Gly Gln Thr
 1 5 10

<210> 132
 <211> 13
 <212> PRT
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<400> 132
 Gly Glu Gln Leu Asp Leu Asp Pro Gly Gln Thr Leu Ile
 1 5 10

<210> 133
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 133
 Gln Leu Asp Leu Asp Pro Gly Gln Thr Leu Ile Tyr Tyr
 1 5 10

<210> 134
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 134
 Asp Leu Asp Pro Gly Gln Thr Leu Ile Tyr Tyr Val Asp
 1 5 10

<210> 135
 <211> 13
 <212> PRT
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<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 135

Asp Pro Gly Gln Thr Leu Ile Tyr Tyr Val Asp Glu Lys
1 5 10

<210> 136

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 136

Gly Gln Thr Leu Ile Tyr Tyr Val Asp Glu Lys Ala Pro
1 5 10

<210> 137

<211> 13

<212> PRT

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<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 137

Thr Leu Ile Tyr Tyr Val Asp Glu Lys Ala Pro Glu Phe
1 5 10

<210> 138

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 138

Ile Tyr Tyr Val Asp Glu Lys Ala Pro Glu Phe Ser Met
1 5 10

<210> 139

<211> 13

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<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 139

Tyr Val Asp Glu Lys Ala Pro Glu Phe Ser Met Gln Gly

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1              5              10

<210> 140
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      Peptide

<400> 140
Asp Glu Lys Ala Pro Glu Phe Ser Met Gln Gly Leu Lys
  1              5              10

<210> 141
<211> 321
<212> DNA
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      Primer

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<222> (1)..(321)

<400> 141
gag ctc cag atg acc cag tct cca tcc tcc ctg tct gct tct gtg gga      48
Glu Leu Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
  1              5              10              15

gac aga gtc acc atc act tgt cgg aca agt cag agc att agc agc tat      96
Asp Arg Val Thr Ile Thr Cys Arg Thr Ser Gln Ser Ile Ser Ser Tyr
              20              25              30

tta aat tgg tat cag cag aaa cca gga cag cct cct aag ctg ctc att      144
Leu Asn Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile
              35              40              45

tac tgg gca tct acc cgg gaa tcc ggg gtc cct gac cga ttc agt ggc      192
Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val Pro Asp Arg Phe Ser Gly
              50              55              60

agc ggg tct ggg aca gat ttc act ctc acc atc agc agt cta caa cct      240
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
              65              70              75              80

gaa gat tct gca act tac tac tgt cag cag agt tac gac atc ccg tac      288
Glu Asp Ser Ala Thr Tyr Tyr Cys Gln Gln Ser Tyr Asp Ile Pro Tyr
              85              90              95

act ttt ggc cag ggg acc aag ctg gag atc aaa      321
Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys

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<210> 142
 <211> 107
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 142

Glu	Leu	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	Ala	Ser	Val	Gly	
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Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Thr	Ser	Gln	Ser	Ile	Ser	Ser	Tyr	
			20					25					30			
Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Pro	Pro	Lys	Leu	Leu	Ile	
			35				40					45				
Tyr	Trp	Ala	Ser	Thr	Arg	Glu	Ser	Gly	Val	Pro	Asp	Arg	Phe	Ser	Gly	
	50					55					60					
Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro	
	65				70					75					80	
Glu	Asp	Ser	Ala	Thr	Tyr	Tyr	Cys	Gln	Gln	Ser	Tyr	Asp	Ile	Pro	Tyr	
				85					90					95		
Thr	Phe	Gly	Gln	Gly	Thr	Lys	Leu	Glu	Ile	Lys						
			100					105								

<210> 143
 <211> 414
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Primer

<220>

<221> CDS

<222> (1)..(414)

<400> 143

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Glu	Val	Gln	Leu	Leu	Glu	Ser	Gly	Gly	Gly	Val	Val	Gln	Pro	Gly	Arg	
1				5				10						15		
tcc	ctg	aga	ctc	tcc	tgt	gca	gcc	tct	gga	ttc	acc	ttc	agt	agc	tat	96
Ser	Leu	Arg	Leu	Ser	Cys	Ala	Ala	Ser	Gly	Phe	Thr	Phe	Ser	Ser	Tyr	
			20					25					30			

ggc atg cac tgg gtc cgc cag gct cca ggc aag ggg ctg gag tgg gtg	144
Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val	
35 40 45	
gca gtt ata tca tat gat gga agt aat aaa tac tat gca gac tcc gtg	192
Ala Val Ile Ser Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val	
50 55 60	
aag ggc cga ttc acc atc tcc aga gac aat tcc aag aac acg ctg tat	240
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr	
65 70 75 80	
ctg caa atg aac agc ctg aga gct gag gac acg gct gtg tat tac tgt	288
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys	
85 90 95	
gcg aaa gat atg ggg tgg ggc agt ggc tgg aga ccc tac tac tac tac	336
Ala Lys Asp Met Gly Trp Gly Ser Gly Trp Arg Pro Tyr Tyr Tyr Tyr	
100 105 110	
ggt atg gac gtc tgg ggc caa ggg acc acg gtc acc gtc tcc tca gca	384
Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala	
115 120 125	
ccc acc aag gct ccg gat gtg ttc cct cta	414
Pro Thr Lys Ala Pro Asp Val Phe Pro Leu	
130 135	

<210> 144

<211> 138

<212> PRT

<213> Artificial Sequence

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<400> 144

Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg	
1 5 10 15	
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr	
20 25 30	
Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val	
35 40 45	
Ala Val Ile Ser Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val	
50 55 60	
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr	
65 70 75 80	
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys	
85 90 95	

Ala Lys Asp Met Gly Trp Gly Ser Gly Trp Arg Pro Tyr Tyr Tyr Tyr
100 105 110

Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala
115 120 125

Pro Thr Lys Ala Pro Asp Val Phe Pro Leu
130 135

<210> 145
<211> 372
<212> DNA
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Primer

<220>
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<222> (1) .. (372)

<400> 145
gag gtg cag ctg ctc gag tct ggg gga gtc gtg gta cag cct ggg ggg 48
Glu Val Gln Leu Leu Glu Ser Gly Gly Val Val Val Gln Pro Gly Gly
1 5 10 15

tcc ctg aga ctc tcc tgt gca gcc tct gga ttc acc ttt gat gat tat 96
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asp Asp Tyr
20 25 30

gcc atg cac tgg gtc cgc cag gct cca ggc aag ggg ctg gag tgg gtg 144
Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

gca gtt ata tca tat gat gga agt aat aaa tac tat gca gac tcc gtg 192
Ala Val Ile Ser Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val
50 55 60

aag ggc cga ttc acc atc tcc aga gac aat tcc aag aac acg ctg tat 240
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
65 70 75 80

ctg caa atg aac agc ctg aga gct gag gac acg gct gtg tat tac tgt 288
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

gcg aaa aag gaa ggc tac tgg ggc cag gga acc ctg gtc acc gtc tcc 336
Ala Lys Lys Glu Gly Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser
100 105 110

tca gca ccc acc aag gct ccg gat gtg ttc cct cta 372
Ser Ala Pro Thr Lys Ala Pro Asp Val Phe Pro Leu
115 120

<210> 146
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 <212> PRT
 <213> Artificial Sequence

<220>
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<400> 146
 Glu Val Gln Leu Leu Glu Ser Gly Gly Val Val Val Gln Pro Gly Gly
 1 5 10 15
 Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asp Asp Tyr
 20 25 30
 Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45
 Ala Val Ile Ser Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val
 50 55 60
 Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
 65 70 75 80
 Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95
 Ala Lys Lys Glu Gly Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser
 100 105 110
 Ser Ala Pro Thr Lys Ala Pro Asp Val Phe Pro Leu
 115 120

<210> 147
 <211> 321
 <212> DNA
 <213> Artificial Sequence

<220>
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<220>
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 <222> (1)..(321)

<400> 147
 gag ctc cag atg acc cag tct cca tcc tcc ctg tct gca tct gta gga 48
 Glu Leu Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 1 5 10 15
 gac aga gtc acc atc act tgc cgg gca agt cag agc att agc agc tat 96

Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Ser	Ile	Ser	Ser	Tyr		
			20					25					30				
tta	aat	tgg	tat	cag	cag	aaa	cca	gga	cag	cct	cct	aag	ctg	ctc	att	144	
Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Pro	Pro	Lys	Leu	Leu	Ile		
		35					40					45					
tac	tgg	gca	tct	acc	cgg	gaa	tcc	ggg	gtc	cct	gac	cga	ttc	agc	ggc	192	
Tyr	Trp	Ala	Ser	Thr	Arg	Glu	Ser	Gly	Val	Pro	Asp	Arg	Phe	Ser	Gly		
		50					55				60						
agt	gaa	tct	ggg	aca	aat	tac	act	ctc	acc	atc	agc	agc	ctg	cag	cct	240	
Ser	Glu	Ser	Gly	Thr	Asn	Tyr	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro		
	65					70				75					80		
gaa	gat	ttt	gct	act	tac	ttt	tgt	caa	cag	tct	gac	agt	ttg	ccg	atc	288	
Glu	Asp	Phe	Ala	Thr	Tyr	Phe	Cys	Gln	Gln	Ser	Asp	Ser	Leu	Pro	Ile		
				85					90					95			
acc	ttc	ggc	caa	ggg	aca	cga	ctg	gac	att	caa						321	
Thr	Phe	Gly	Gln	Gly	Thr	Arg	Leu	Asp	Ile	Gln							
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<210> 148

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<400> 148

Glu	Leu	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	Ala	Ser	Val	Gly		
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Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Ser	Ile	Ser	Ser	Tyr		
			20					25					30				
Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Pro	Pro	Lys	Leu	Leu	Ile		
		35					40					45					
Tyr	Trp	Ala	Ser	Thr	Arg	Glu	Ser	Gly	Val	Pro	Asp	Arg	Phe	Ser	Gly		
		50					55				60						
Ser	Glu	Ser	Gly	Thr	Asn	Tyr	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro		
	65					70				75					80		
Glu	Asp	Phe	Ala	Thr	Tyr	Phe	Cys	Gln	Gln	Ser	Asp	Ser	Leu	Pro	Ile		
				85					90					95			
Thr	Phe	Gly	Gln	Gly	Thr	Arg	Leu	Asp	Ile	Gln							
			100					105									

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 <400> 149
 aggtgcagct gctcgagtct gg 22

 <210> 150
 <211> 24
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 Primer

 <400> 150
 cagagtcacc ttgctcgagt ctgg 24

 <210> 151
 <211> 23
 <212> DNA
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 Primer

 <400> 151
 caggtgcagc tgctcgagtc ggg 23

 <210> 152
 <211> 23
 <212> DNA
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 <220>
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 Primer

 <400> 152
 caggtgcagc tactcgagtg ggg 23

 <210> 153
 <211> 23
 <212> DNA
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 Primer

 <400> 153
 caggtacagc tgctcgagtc agg 23

 <210> 154
 <211> 29
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 Primer

 <400> 154
 tgccttactg tctctggcca gcggaagat 29

 <210> 155
 <211> 38
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 <400> 155
 gagccgcacg agcccgagct ccagatgacc cagtctcc 38

 <210> 156
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 <400> 156
 gagccgcacg agcccgagct cgtgattgac agcagtctcc 40

 <210> 157
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 <212> DNA
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 <400> 157

gagccgcacg agcccgagct cgtgatgacc tcagtctcc 39

<210> 158
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
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<400> 158
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<210> 159
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 Primer

<400> 159
 gagccgcacg agcccgagct cgtgctgact cagtctcc 38

<210> 160
 <211> 58
 <212> DNA
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<400> 160
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<210> 161
 <211> 24
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<220>
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 Primer

<400> 161
 aattttgagc tcactcagcc ccac 24

<210> 162
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 Primer

 <400> 162
 tctgccgagc tccagcctgc ctccgtg 27

 <210> 163
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 <212> DNA
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 Primer

 <400> 163
 tctgtggagc tccagccgcc ctcaagt 27

 <210> 164
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 Primer

 <400> 164
 tctgaagagc tccaggaccc tgttgtgtct gtg 33

 <210> 165
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 cagtctgagc tcacgcagcc gcc 24

 <210> 166
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 <212> DNA
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<400> 168 caggctgagc tcactcagcc gtcttcc	27
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<120> NOVEL METHOD FOR THE PRODUCTION OF ANTIHUMAN ANTIGEN
RECEPTORS AND USES THEREOF

<130> DEBE:017US

<140> 09/403,107

<141> 2002-07-26

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22

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24

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<210> 6
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27

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27

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Primer

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<400> 18
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<210> 23
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Peptide

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1 5 10

<210> 24
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Peptide

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Ala Ala Ala Gln Glu Glu Cys Val Cys Glu Asn Tyr Lys
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Peptide

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Ala Gln Glu Glu Cys Val Cys Glu Asn Tyr Lys Leu Ala

1 5 10

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Glu Glu Cys Val Cys Glu Asn Tyr Lys Leu Ala Val Asn
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Cys Val Cys Glu Asn Tyr Lys Leu Ala Val Asn Cys Phe
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<400> 28
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<400> 29
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<210> 32
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1 5 10

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1 5 10

<210> 34
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1 5 10

<210> 35
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<400> 35
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1 5 10

<210> 36
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<400> 36
Gln Cys Gln Cys Thr Ser Val Gly Ala Gln Asn Thr Val
1 5 10

<210> 37
<211> 13
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<400> 37
Gln Cys Thr Ser Val Gly Ala Gln Asn Thr Val Ile Cys
1 5 10

<210> 38
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1 5 10

<210> 39
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<210> 40
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<400> 40
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1 5 10

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1 5 10

<210> 42

<211> 13
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1 5 10

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<400> 43
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<210> 44
<211> 13
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<400> 44
Lys Leu Ala Ala Lys Cys Leu Val Met Lys Ala Glu Met
1 5 10

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<400> 45
Ala Ala Lys Cys Leu Val Met Lys Ala Glu Asn Gly
1 5 10

<210> 46
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<212> PRT
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Peptide

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Lys Cys Leu Val Met Lys Ala Glu Met Asn Gly Ser Lys
1 5 10

<210> 47
<211> 13
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Peptide

<400> 47
Leu Val Met Lys Ala Glu Met Asn Gly Ser Lys Leu Gly
1 5 10

<210> 48
<211> 13
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Peptide

<400> 48
Met Lys Ala Glu Met Asn Gly Ser Lys Leu Gly Arg Arg
1 5 10

<210> 49
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Peptide

<400> 49
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1 5 10

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<400> 50

Met Asn Gly Ser Lys Leu Gly Arg Arg Ala Lys Pro Glu
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<210> 51

<211> 13

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<400> 51

Gly Ser Lys Leu Gly Arg Arg Ala Lys Pro Glu Gly Ala
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<210> 52

<211> 13

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<400> 52

Lys Leu Gly Arg Arg Ala Lys Pro Glu Gly Ala Leu Gln
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<210> 53

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<400> 53

Gly Arg Arg Ala Lys Pro Glu Gly Ala Leu Gln Asn Asn
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<210> 54

<211> 13

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<210> 55

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<210> 56

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<212> PRT

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Glu Gly Ala Leu Gln Asn Asn Asp Gly Leu Tyr Asp Pro
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<210> 57

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Ala Leu Gln Asn Asn Asp Gly Leu Tyr Asp Pro Asp Cys
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<210> 58

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<400> 58

Gln Asn Asn Asp Gly Leu Tyr Asp Pro Asp Cys Asp Glu
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<210> 59

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<400> 59

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<210> 60

<211> 13

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<400> 60

Gly Leu Tyr Asp Pro Asp Cys Asp Glu Ser Gly Leu Phe
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<400> 61

Tyr Asp Pro Asp Cys Asp Glu Ser Gly Leu Phe Lys Ala
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<210> 62

<211> 13

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<400> 62

Pro Asp Cys Asp Glu Ser Gly Leu Phe Lys Ala Lys Gln
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<210> 63

<211> 13

<212> PRT

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<400> 63

Cys Asp Glu Ser Gly Leu Phe Lys Ala Lys Gln Cys Asn
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<210> 64

<211> 13

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<400> 64

Glu Ser Gly Leu Phe Lys Ala Lys Gln Cys Asn Gly Thr
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<210> 65

<211> 13

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Gly Leu Phe Lys Ala Lys Gln Cys Asn Gly Thr Ser Thr
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<210> 66

<211> 13

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Peptide

<400> 66

Phe Lys Ala Lys Gln Cys Asn Gly Thr Ser Thr Cys Trp
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<210> 67

<211> 13

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Peptide

<400> 67

Ala Lys Gln Cys Asn Gly Thr Ser Thr Cys Trp Cys Val
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<210> 68

<211> 13

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Peptide

<400> 68

Gln Cys Asn Gly Thr Ser Thr Cys Trp Cys Val Asn Thr
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<210> 69

<211> 13

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Peptide

<400> 69

Asn Gly Thr Ser Thr Cys Trp Cys Val Asn Thr Ala Gly
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<210> 70

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Peptide

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<210> 71
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Peptide

<400> 71
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1 5 10

<210> 72
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Peptide

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1 5 10

<210> 73
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Peptide

<400> 73
Val Asn Thr Ala Gly Val Arg Arg Thr Asp Lys Asp Thr
1 5 10

<210> 74
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Peptide

<400> 74
Thr Ala Gly Val Arg Arg Thr Asp Lys Asp Thr Glu Ile
1 5 10

<210> 75
<211> 13
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Peptide

<400> 75
Gly Val Arg Arg Thr Asp Lys Asp Thr Glu Ile Thr Cys
1 5 10

<210> 76
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Peptide

<400> 76
Arg Arg Thr Asp Lys Asp Thr Glu Ile Thr Cys Ser Glu
1 5 10

<210> 77
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Peptide

<400> 77
Thr Asp Lys Asp Thr Glu Ile Thr Cys Ser Glu Arg Val
1 5 10

<210> 78
<211> 13
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Peptide

<400> 78

Lys Asp Thr Glu Ile Thr Cys Ser Glu Arg Val Arg Thr
1 5 10

<210> 79

<211> 13

<212> PRT

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<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 79

Thr Glu Ile Thr Cys Ser Glu Arg Val Arg Thr Tyr Trp
1 5 10

<210> 80

<211> 13

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 80

Ile Thr Cys Ser Glu Arg Val Arg Thr Tyr Trp Ile Ile
1 5 10

<210> 81

<211> 13

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 81

Cys Ser Glu Arg Val Arg Thr Tyr Trp Ile Ile Ile Glu
1 5 10

<210> 82

<211> 13

<212> PRT

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<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 82

Glu Arg Val Arg Thr Tyr Trp Ile Ile Ile Glu Leu Lys

1 5 10

<210> 83
<211> 13
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<400> 83
Val Arg Thr Tyr Trp Ile Ile Ile Glu Leu Lys His Lys
1 5 10

<210> 84
<211> 13
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<400> 84
Thr Tyr Trp Ile Ile Ile Glu Leu Lys His Lys Ala Arg
1 5 10

<210> 85
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<400> 85
Trp Ile Ile Ile Glu Leu Lys His Lys Ala Arg Glu Lys
1 5 10

<210> 86
<211> 13
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<400> 86
Ile Ile Glu Leu Lys His Lys Ala Arg Glu Lys Pro Tyr
1 5 10

<210> 87
<211> 13
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<400> 87
Glu Leu Lys His Lys Ala Arg Glu Lys Pro Tyr Asp Ser
1 5 10

<210> 88
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<400> 88
Lys His Lys Ala Arg Glu Lys Pro Tyr Asp Ser Lys Ser
1 5 10

<210> 89
<211> 13
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<400> 89
Lys Ala Arg Glu Lys Pro Tyr Asp Ser Lys Ser Leu Arg
1 5 10

<210> 90
<211> 13
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<400> 90
Arg Glu Lys Pro Tyr Asp Ser Lys Ser Leu Arg Thr Ala
1 5 10

<210> 91
<211> 13
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<400> 91
Lys Pro Tyr Asp Ser Lys Ser Leu Arg Thr Ala Leu Gln
1 5 10

<210> 92
<211> 13
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<400> 92
Tyr Asp Ser Lys Ser Leu Arg Thr Ala Leu Gln Lys Glu
1 5 10

<210> 93
<211> 13
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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 93
Ser Lys Ser Leu Arg Thr Ala Leu Gln Lys Glu Ile Thr
1 5 10

<210> 94
<211> 13
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<400> 94
Ser Leu Arg Thr Ala Leu Gln Lys Glu Ile Thr Thr Arg
1 5 10

<210> 95
<211> 13
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<400> 95
Arg Thr Ala Leu Gln Lys Glu Ile Thr Thr Arg Tyr Gln
1 5 10

<210> 96
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<400> 96
Ala Leu Gln Lys Glu Ile Thr Thr Arg Tyr Gln Leu Asp
1 5 10

<210> 97
<211> 13
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<400> 97
Gln Lys Glu Ile Thr Thr Arg Tyr Gln Leu Asp Pro Lys
1 5 10

<210> 98
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Glu Ile Thr Thr Arg Tyr Gln Leu Asp Pro Lys Phe Ile
1 5 10

<210> 99

<211> 13
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<400> 99
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<210> 100
<211> 13
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<400> 100
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1 5 10

<210> 101
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<400> 101
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1 5 10

<210> 102
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<210> 103
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<212> PRT
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<400> 103

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<210> 104

<211> 13

<212> PRT

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 104

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<210> 105

<211> 13

<212> PRT

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<400> 106

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 107

Glu Asn Asn Val Ile Thr Ile Asp Leu Val Gln Asn Ser
1 5 10

<210> 108

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 108

Asn Val Ile Thr Ile Asp Leu Val Gln Asn Ser Ser Gln
1 5 10

<210> 109

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 109

Ile Thr Ile Asp Leu Val Gln Asn Ser Ser Gln Lys Thr
1 5 10

<210> 110

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 110

Ile Asp Leu Val Gln Asn Ser Ser Gln Lys Thr Gln Asn
1 5 10

<210> 111

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 111

Leu Val Gln Asn Ser Ser Gln Lys Thr Gln Asn Asp Val
1 5 10

<210> 112

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 112

Gln Asn Ser Ser Gln Lys Thr Gln Asn Asp Val Asp Ile
1 5 10

<210> 113

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 113

Ser Ser Gln Lys Thr Gln Asn Asp Val Asp Ile Ala Asp
1 5 10

<210> 114

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 114

Gln Lys Thr Gln Asn Asp Val Asp Ile Ala Asp Val Ala
1 5 10

<210> 115

<211> 13

<212> PRT

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 115
Thr Gln Asn Asp Val Asp Ile Ala Asp Val Ala Tyr Tyr
1 5 10

<210> 116
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 116
Asn Asp Val Asp Ile Ala Asp Val Ala Tyr Tyr Phe Glu
1 5 10

<210> 117
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 117
Val Asp Ile Ala Asp Val Ala Tyr Tyr Phe Glu Lys Asp
1 5 10

<210> 118
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 118
Ile Ala Asp Val Ala Tyr Tyr Phe Glu Lys Asp Val Lys
1 5 10

<210> 119
<211> 13
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 119

Asp Val Ala Tyr Tyr Phe Glu Lys Asp Val Lys Gly Glu
1 5 10

<210> 120

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 120

Ala Tyr Tyr Phe Glu Lys Asp Val Lys Gly Glu Ser Leu
1 5 10

<210> 121

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 121

Tyr Phe Glu Lys Asp Val Lys Gly Glu Ser Leu Phe His
1 5 10

<210> 122

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 122

Glu Lys Asp Val Lys Gly Glu Ser Leu Phe His Ser Lys
1 5 10

<210> 123

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

Peptide

<400> 123

Asp Val Lys Gly Glu Ser Leu Phe His Ser Lys Lys Met
1 5 10

<210> 124

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 124

Lys Gly Glu Ser Leu Phe His Ser Lys Lys Met Asp Leu
1 5 10

<210> 125

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 125

Glu Ser Leu Phe His Ser Lys Lys Met Asp Leu Thr Val
1 5 10

<210> 126

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 126

Leu Phe His Ser Lys Lys Met Asp Leu Thr Val Asn Gly
1 5 10

<210> 127

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 127

His Ser Lys Lys Met Asp Leu Thr Val Asn Gly Glu Gln
1 5 10

<210> 128

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 128

Lys Lys Met Asp Leu Thr Val Asn Gly Glu Gln Leu Asp
1 5 10

<210> 129

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 129

Met Asp Leu Thr Val Asn Gly Glu Gln Leu Asp Leu Asp
1 5 10

<210> 130

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 130

Leu Thr Val Asn Gly Glu Gln Leu Asp Leu Asp Pro Gly
1 5 10

<210> 131

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 131
Val Asn Gly Glu Gln Leu Asp Leu Asp Pro Gly Gln Thr
1 5 10

<210> 132
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 132
Gly Glu Gln Leu Asp Leu Asp Pro Gly Gln Thr Leu Ile
1 5 10

<210> 133
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 133
Gln Leu Asp Leu Asp Pro Gly Gln Thr Leu Ile Tyr Tyr
1 5 10

<210> 134
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 134
Asp Leu Asp Pro Gly Gln Thr Leu Ile Tyr Tyr Val Asp
1 5 10

<210> 135
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 135

Asp Pro Gly Gln Thr Leu Ile Tyr Tyr Val Asp Glu Lys
1 5 10

<210> 136

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 136

Gly Gln Thr Leu Ile Tyr Tyr Val Asp Glu Lys Ala Pro
1 5 10

<210> 137

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 137

Thr Leu Ile Tyr Tyr Val Asp Glu Lys Ala Pro Glu Phe
1 5 10

<210> 138

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 138

Ile Tyr Tyr Val Asp Glu Lys Ala Pro Glu Phe Ser Met
1 5 10

<210> 139

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 139

Tyr Val Asp Glu Lys Ala Pro Glu Phe Ser Met Gln Gly

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1              5              10

<210> 140
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      Peptide

<400> 140
Asp Glu Lys Ala Pro Glu Phe Ser Met Gln Gly Leu Lys
 1              5              10

<210> 141
<211> 321
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      Primer

<220>
<221> CDS
<222> (1)..(321)

<400> 141
gag ctc cag atg acc cag tct cca tcc tcc ctg tct gct tct gtg gga      48
Glu Leu Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 1              5              10              15

gac aga gtc acc atc act tgt cgg aca agt cag agc att agc agc tat      96
Asp Arg Val Thr Ile Thr Cys Arg Thr Ser Gln Ser Ile Ser Ser Tyr
              20              25              30

tta aat tgg tat cag cag aaa cca gga cag cct cct aag ctg ctc att      144
Leu Asn Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile
              35              40              45

tac tgg gca tct acc cgg gaa tcc ggg gtc cct gac cga ttc agt ggc      192
Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val Pro Asp Arg Phe Ser Gly
              50              55              60

agc ggg tct ggg aca gat ttc act ctc acc atc agc agt cta caa cct      240
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
              65              70              75              80

gaa gat tct gca act tac tac tgt cag cag agt tac gac atc ccg tac      288
Glu Asp Ser Ala Thr Tyr Tyr Cys Gln Gln Ser Tyr Asp Ile Pro Tyr
              85              90              95

act ttt ggc cag ggg acc aag ctg gag atc aaa      321
Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys

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100

105

<210> 142
 <211> 107
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 142

Glu	Leu	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	Ala	Ser	Val	Gly
1				5				10						15	
Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Thr	Ser	Gln	Ser	Ile	Ser	Ser	Tyr
			20					25					30		
Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Pro	Pro	Lys	Leu	Leu	Ile
	35						40					45			
Tyr	Trp	Ala	Ser	Thr	Arg	Glu	Ser	Gly	Val	Pro	Asp	Arg	Phe	Ser	Gly
	50					55				60					
Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro
65				70					75					80	
Glu	Asp	Ser	Ala	Thr	Tyr	Tyr	Cys	Gln	Gln	Ser	Tyr	Asp	Ile	Pro	Tyr
				85					90					95	
Thr	Phe	Gly	Gln	Gly	Thr	Lys	Leu	Glu	Ile	Lys					
			100					105							

<210> 143
 <211> 414
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Primer

<220>

<221> CDS

<222> (1)..(414)

<400> 143

gag	gtg	cag	ctg	ctc	gag	tct	ggg	gga	ggc	gtg	gtc	cag	cct	ggg	agg	48
Glu	Val	Gln	Leu	Leu	Glu	Ser	Gly	Gly	Gly	Val	Val	Gln	Pro	Gly	Arg	
1				5				10						15		
tcc	ctg	aga	ctc	tcc	tgt	gca	gcc	tct	gga	ttc	acc	ttc	agt	agc	tat	96
Ser	Leu	Arg	Leu	Ser	Cys	Ala	Ala	Ser	Gly	Phe	Thr	Phe	Ser	Ser	Tyr	
			20					25					30			

ggc atg cac tgg gtc cgc cag gct cca ggc aag ggg ctg gag tgg gtg	144
Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val	
35 40 45	
gca gtt ata tca tat gat gga agt aat aaa tac tat gca gac tcc gtg	192
Ala Val Ile Ser Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val	
50 55 60	
aag ggc cga ttc acc atc tcc aga gac aat tcc aag aac acg ctg tat	240
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr	
65 70 75 80	
ctg caa atg aac agc ctg aga gct gag gac acg gct gtg tat tac tgt	288
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys	
85 90 95	
gcg aaa gat atg ggg tgg ggc agt ggc tgg aga ccc tac tac tac tac	336
Ala Lys Asp Met Gly Trp Gly Ser Gly Trp Arg Pro Tyr Tyr Tyr Tyr	
100 105 110	
ggt atg gac gtc tgg ggc caa ggg acc acg gtc acc gtc tcc tca gca	384
Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala	
115 120 125	
ccc acc aag gct ccg gat gtg ttc cct cta	414
Pro Thr Lys Ala Pro Asp Val Phe Pro Leu	
130 135	

<210> 144

<211> 138

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 144

Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg	
1 5 10 15	
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr	
20 25 30	
Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val	
35 40 45	
Ala Val Ile Ser Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val	
50 55 60	
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr	
65 70 75 80	
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys	
85 90 95	

Ala Lys Asp Met Gly Trp Gly Ser Gly Trp Arg Pro Tyr Tyr Tyr Tyr
100 105 110

Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala
115 120 125

Pro Thr Lys Ala Pro Asp Val Phe Pro Leu
130 135

<210> 145
<211> 372
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<220>
<221> CDS
<222> (1) .. (372)

<400> 145
gag gtg cag ctg ctc gag tct ggg gga gtc gtg gta cag cct ggg ggg 48
Glu Val Gln Leu Leu Glu Ser Gly Gly Val Val Val Gln Pro Gly Gly
1 5 10 15

tcc ctg aga ctc tcc tgt gca gcc tct gga ttc acc ttt gat gat tat 96
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asp Asp Tyr
20 25 30

gcc atg cac tgg gtc cgc cag gct cca ggc aag ggg ctg gag tgg gtg 144
Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

gca gtt ata tca tat gat gga agt aat aaa tac tat gca gac tcc gtg 192
Ala Val Ile Ser Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val
50 55 60

aag ggc cga ttc acc atc tcc aga gac aat tcc aag aac acg ctg tat 240
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
65 70 75 80

ctg caa atg aac agc ctg aga gct gag gac acg gct gtg tat tac tgt 288
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

gcg aaa aag gaa ggc tac tgg ggc cag gga acc ctg gtc acc gtc tcc 336
Ala Lys Lys Glu Gly Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser
100 105 110

tca gca ccc acc aag gct ccg gat gtg ttc cct cta 372
Ser Ala Pro Thr Lys Ala Pro Asp Val Phe Pro Leu
115 120

<210> 146
<211> 124
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 146
Glu Val Gln Leu Leu Glu Ser Gly Gly Val Val Val Gln Pro Gly Gly
1 5 10 15
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asp Asp Tyr
20 25 30
Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45
Ala Val Ile Ser Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val
50 55 60
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
65 70 75 80
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95
Ala Lys Lys Glu Gly Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser
100 105 110
Ser Ala Pro Thr Lys Ala Pro Asp Val Phe Pro Leu
115 120

<210> 147
<211> 321
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<220>
<221> CDS
<222> (1)..(321)

<400> 147
gag ctc cag atg acc cag tct cca tcc tcc ctg tct gca tct gta gga 48
Glu Leu Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15
gac aga gtc acc atc act tgc cgg gca agt cag agc att agc agc tat 96

Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Ser	Ile	Ser	Ser	Tyr	
			20					25					30			
tta	aat	tgg	tat	cag	cag	aaa	cca	gga	cag	cct	cct	aag	ctg	ctc	att	144
Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Pro	Pro	Lys	Leu	Leu	Ile	
		35					40					45				
tac	tgg	gca	tct	acc	cgg	gaa	tcc	ggg	gtc	cct	gac	cga	ttc	agc	ggc	192
Tyr	Trp	Ala	Ser	Thr	Arg	Glu	Ser	Gly	Val	Pro	Asp	Arg	Phe	Ser	Gly	
		50				55					60					
agt	gaa	tct	ggg	aca	aat	tac	act	ctc	acc	atc	agc	agc	ctg	cag	cct	240
Ser	Glu	Ser	Gly	Thr	Asn	Tyr	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro	
	65				70					75					80	
gaa	gat	ttt	gct	act	tac	ttt	tgt	caa	cag	tct	gac	agt	ttg	ccg	atc	288
Glu	Asp	Phe	Ala	Thr	Tyr	Phe	Cys	Gln	Gln	Ser	Asp	Ser	Leu	Pro	Ile	
				85					90					95		
acc	ttc	ggc	caa	ggg	aca	cga	ctg	gac	att	caa						321
Thr	Phe	Gly	Gln	Gly	Thr	Arg	Leu	Asp	Ile	Gln						
			100					105								

<210> 148

<211> 107

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 148

Glu	Leu	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	Ala	Ser	Val	Gly
1				5				10						15	
Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Ser	Ile	Ser	Ser	Tyr
			20					25					30		
Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Pro	Pro	Lys	Leu	Leu	Ile
		35					40					45			
Tyr	Trp	Ala	Ser	Thr	Arg	Glu	Ser	Gly	Val	Pro	Asp	Arg	Phe	Ser	Gly
		50				55					60				
Ser	Glu	Ser	Gly	Thr	Asn	Tyr	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro
	65				70					75					80
Glu	Asp	Phe	Ala	Thr	Tyr	Phe	Cys	Gln	Gln	Ser	Asp	Ser	Leu	Pro	Ile
				85					90					95	
Thr	Phe	Gly	Gln	Gly	Thr	Arg	Leu	Asp	Ile	Gln					
			100					105							

<210> 149
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 149
 aggtgcagct gctcgagtct gg 22

 <210> 150
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 150
 cagagtcacc ttgctcgagt ctgg 24

 <210> 151
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 151
 caggtgcagc tgctcgagtc ggg 23

 <210> 152
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 152
 caggtgcagc tactcgagtg ggg 23

 <210> 153
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 153
 caggtacagc tgctcgagtc agg 23

<210> 154
 <211> 29
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 154
 tgccttactg tctctggcca gcggaagat 29

<210> 155
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 155
 gagccgcacg agcccgagct ccagatgacc cagtctcc 38

<210> 156
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 156
 gagccgcacg agcccgagct cgtgattgac agcagtctcc 40

<210> 157
 <211> 39
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 157

gagccgcacg agcccgagct cgtgatgacc tcagtctcc 39

<210> 158

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 158

gagccgcacg agcccgagct cacactcacg cagtctcc 38

<210> 159

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 159

gagccgcacg agcccgagct cgtgctgact cagtctcc 38

<210> 160

<211> 58

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 160

gcgccgtcta gaattaacac tctccctgt tgaagctctt tgtgacgggc gaactcag 58

<210> 161

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 161

aattttgagc tcactcagcc ccac 24

<210> 162

<211> 27

<212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 162
 tctgccgagc tccagcctgc ctccgtg 27

 <210> 163
 <211> 27
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 163
 tctgtggagc tccagccgcc ctcaagt 27

 <210> 164
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 164
 tctgaagagc tccaggaccc tgttgtgtct gtg 33

 <210> 165
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 165
 cagtctgagc tcacgcagcc gcc 24

 <210> 166
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic

Primer

<400> 166
cagactgagc tcactcagga gccc 24

<210> 167
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 167
caggttgagc tcactcaacc gccc 24

<210> 168
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 168
caggctgagc tcactcagcc gtcttcc 27

<210> 169
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 169
cgccgtctag aattatgaac attctgtagg 30